

WHAT IS CLAIMED IS:

1. An isolated polypeptide comprising at least 12 contiguous residues of the amino acid sequence of SEQ ID NO: 2.

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2. An isolated polypeptide comprising the amino acid sequence defined by SEQ ID NO: 2 or a adenosine binding fragment thereof.

3. An antibody which specifically binds to the polypeptide of claim 2.

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4. An isolated or recombinant nucleic acid encoding the polypeptide of claim 1.

5. A recombinant vector comprising the nucleic acid of claim 4.

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6. A host cell comprising the recombinant vector of claim 5.

7. A method for making a polypeptide comprising culturing a host cell of claim 6 under conditions in which the nucleic acid is expressed.

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8. The method of claim 7 in which the polypeptide is isolated from the culture.

9. An isolated or recombinant nucleic acid selected from the group consisting of:

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(a) a nucleic acid encoding a polypeptide comprising the amino acid sequence defined by SEQ ID NO: 2;

(b) a nucleic acid that hybridizes under moderately stringent conditions to the nucleic acid of (a) and encodes a polypeptide that (i) binds adenosine and (ii) is at least 80% identical to a polypeptide encoded by the nucleic acid of (a); and

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(c) a nucleic acid that, due to the degeneracy of the genetic code, encodes a polypeptide encoded by a nucleic acid of (a) or (b).

10. A recombinant vector comprising the nucleic acid of claim 9.

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11. A host cell comprising the recombinant vector of claim 10.

12. A method for making a polypeptide comprising culturing a host cell of claim 11 under conditions in which the nucleic acid is expressed.

13. The method of claim 12 in which the receptor is isolated from the culture.

14. A method for identifying an agonist or antagonist of a mammalian adenosine
5 receptor, comprising:

(a) contacting the polypeptide of claim 2 in the presence of a known amount of
labeled adenosine or a surrogate thereof with a sample to be tested for the presence of a
adenosine agonist or antagonist; and

(b) measuring the amount of labeled adenosine or surrogate specifically bound to the
10 polypeptide;

whereby a adenosine agonist or antagonist in the sample is identified by measuring
substantially reduced binding of the labeled adenosine or surrogate to the polypeptide,
compared to what would be measured in the absence of such agonist or antagonist.

15. The method of claim 14 which further comprises:

(c) contacting the polypeptide in the presence of a known amount of labeled
adenosine or a surrogate thereof with a compound identified as a adenosine agonist or
antagonist in steps (a) and (b); and

(d) measuring the amount of labeled adenosine or surrogate bound to the
20 polypeptide;

whereby a adenosine agonist or antagonist specific for a mammalian adenosine
receptor is identified by measuring substantially undiminished binding of the labeled
adenosine or surrogate to the polypeptide, compared to what would be measured in the
absence of such agonist or antagonist.

16. A method for identifying an agonist or antagonist of a mammalian adenosine
receptor comprising:

(a) contacting cells expressing the polypeptide of claim 2, in the presence of a
known amount of adenosine or surrogate thereof with a sample to be tested for the presence
30 of a mammalian adenosine receptor agonist or antagonist; and

(b) measuring at least one cellular function modulated by the binding of a ligand to
said polypeptide;

whereby a mammalian adenosine receptor agonist or antagonist in the sample is
identified by measuring its effect on said cellular function compared to what would be
35 measured in the absence of such agonist or antagonist.

17. An agonist or antagonist of a mammalian adenosine receptor identified by
the method of claim 14.

18. An agonist or antagonist of a mammalian adenosine receptor identified by the method of claim 16.

5 19. A method for treating an adenosine-mediated medical condition comprising administering to a mammal afflicted with a medical condition caused or mediated by adenosine, an effective amount of an agonist or antagonist of the polypeptide of claim 2.

10 20. A method for measuring expression of a mammalian adenosine receptor gene in a biological sample comprising the steps of:
(a) isolating messenger RNA from the sample;
(b) reverse transcribing the messenger RNA into cDNA;
(c) performing PCR on the cDNA using oligonucleotide primers derived from a nucleic acid encoding the polypeptide of claim 2; and
15 (d) quantifying the amount of PCR product.